**Attachment C**

**Responses to SAIC Comments on the Operable Unit 6 Draft Final RFI/RI Report 9/95**

**General Comments**

1 Comments
The document is thorough and unusually well written Some of the detail on general information and discussion of methods could be moved to an appendix to reduce the bulk of the text As usual with such a document, technical editing should be conducted In some instances the table of contents is incomplete and figures could be adjusted to improve clarity

Response
A technical edit will be conducted before submitted as a Final

2 Comments
Title of report should not use "Phase I" unless there are plans to prepare additional RFI/RI reports entitled "Phase II," etc

Response
The Phase I designation will be retained to maintain consistency with previously generated documents

**Specific Comments**

1 Comments
Page iiv, Table of Contents, OU 6 List of Acronyms and Abbreviations – 1,2,-dichloroethane is misspelled

Response
Comment was incorporated

2 Comments
Page iv, Table of Contents, OU 6 List of Acronyms and Abbreviations – The chemical designation for Cesium should be "Cs "

Response
Comment was incorporated

3 Comments
Page ivi, Table of Contents, OU 6 List of Acronyms and Abbreviations – The definition for "meq/l" should be "milliequivalents/liter "

Response
Comment was incorporated

4 Comments
Pages 2-7, 2-9, 2-12, 2-13, 2-21 – Figures 2 1-2, 2 1-3, 2 1-4, 2 1-5, and Table 2 2-3 are missing from the report







1/17

Response
Pages and figures have already been added to the report The table will be added for the final report

5 Comments
Section 1 3 2 1st paragraph The symbols used in Figure 1 3-3 (referenced in 1 3 2) for the historical locations of IHSSs 167 2 and 167 3 is the same except for different line weight as the symbol used for the present landfill, IHSS 114 Symbols with more significant difference should be used The legend does not show the symbol for the landfill The text only refers to the historical and revised boundaries of IHSS 167 2, but the figure shows revised boundaries for both IHSSs

Response
The symbol for the OU7 Landfill was changed and added to the legend The text refers to both IHSSs in Section 1 3 2, paragraph 1, 3rd sentence

6 Comments
2nd paragraph This paragraph indicates that the locations of IHSS 167 2 and 167 3 were revised and the boundaries of 5 other IHSSs adjusted in the HRR based on a reevaluation that happened after the OU 6 Work Plan was written This paragraph goes on to say that the investigations were carried out according to the specifications in the work plan but that the Phase I boreholes and wells were located after a review of the historical data and aerial photographs It is assumed that the investigations were conducted in the adjusted areas rather than in the previous locations This is not clearly stated in the text

Response
The investigations for the OU6 IHSSs were conducted within the original locations as specified by the Work Plan The field sampling was not altered to incorporate the revised IHSSs from the Historical Release Report The text was changed to provide clarity

7 Comments
Section 1 3 2 1 4th sentence, 3rd paragraph Delete one of the two references to June, 1972

Response
Comment was incorporated

8 Comments
Section 1 3 2 2 This section contains a description of the streams that drain surface water from the area and does not describe particular IHSSs It does, however, lead into the description of the A and B-Series ponds Consideration should be given to move this section to another area in the report that describes physiographic features such as Section 3, or editing it into the description of the A and B-Series ponds

Response
Section 1 3 2 2 was deleted This information already exists within Section 3

9 Comments
Section 1 3 2 4 The 5th paragraph says that the B-3 pond receives effluent from the STP It is not clear how the effluent reaches B-3 without encountering ponds B-1 and 2 These 2 ponds lie between the STP and B-3 and no diversion or pipeline is shown that would by-pass B-I and 2 (see Figures 1 3-3 & 1 3-6)

2

Response
Figure and text have incorporated a reference to the underground pipeline that transfers water from the STP to Pond B-3

10 Comments
Figure 1 3-8 The area of detail for IHSS 143 is not graphically consistent with the drawling it details The detail map uses the designation "stream" which must be the McKay Ditch shown on the larger drawling The orientations of these 2 features ("stream" and McKay Ditch) are not consistent on the 2 drawings Both maps should use the same designations and show similar features in the same orientation so that the reader can easily relate the features

Response
The source for these figures presented the information in this manner Although this would improve the quality of the report, the information is presented in a readable manner and the effort necessary to revise this figure would not add significant value

11 Comments
Section 1 3 2 9 2nd paragraph A reference is made to a 1988 EPA document that provided information about the history of the A, B, and C Trenches Earlier, in section 1 3 2, 3rd paragraph, the sources for the descriptions of the IHSSs were given and the EPA document was not included in that list of sources

Response
Document was added to the text of Section 1 3 2

12 Comments
Section 1 3 2 10 This section is not listed in the Table of Contents

Response
The document was reformatted and all fourth level headings were removed

13 Comments
Section 1 4 2nd paragraph Six Technical Memoranda were prepared and the purpose of this paragraph was apparently to list them The paragraph lists 7 documents as bulletted items and only labels 5 as being TMs This inconsistency should be fixed

Response
The text within this section was changed to read "supplementary technical reports" instead of strictly technical memoranda

14 Comments
Section 2 1 4th paragraph This paragraph describes when decontamination of various equipment occurred No mention of decontamination prior to the investigation has been made, only that equipment was decontaminated between IHSSs and at the end of the investigation

Response
The first sentence of paragraph 4 states "Prior to the start of field activities, drilling and sampling equipment was decontaminated at the RFETS main decontamination facility in accordance with SOPs FO 03 and FO 04 "

15 Comments

Section 2 1 3 1 2nd paragraph The text states, "VOC continuous samples were collected throughout the entire borehole depth for lithologic logging purposes " VOC samples and lithologic samples should be handled differently Samples used for lithologic logging should not be used for VOC samples for obvious reasons

Response

The acronym VOC was removed from the text It seems to have been placed in the sentence in error, the sentence is more accurate without it

16 Comments

Section 2 1 3 4 How were the 3 soil profile locations selected? They seem to be spread out across OU 6 to give general coverage Or were they selected based on specific IHSS requirements?

Response

The soil profile trenches were not required by the OU6 Work Plan Although they were excavated, described, and sampled during the OU6 field investigation, they were generated for a soil investigation project All references to the soil profiles were deleted

17 Comments

Section 2 2 2nd paragraph Please give more detail to the explanation why the stage numbering in this report does not match the numbering assigned in the work plan The stages numbered in the work plan follow the logical order in which the investigation should have proceeded Later stages may be based on the preliminary data gathering or preliminary field surveys

Response

The chronological order of steps as presented in this report match the chronological order presented in the Work Plan There was no deviation in the intended order of events The stage numbering in this report provides clarity and consistency between the stage number and the activity

18 Comments

Section 2 2 2 Page 2-22, third para , A and B-Series Ponds (IHSSs 142 1 through 142 9), W&I Pond (IHSS 142 12), and Walnut Creek Drainages (Non-IHSS), Stage 4 – This paragraph states that no analytical results were used from the wells 75092 and 75292 If this is true, then Table 2 2-1 and this section should state that this was a deviation from the TM1 and was an incomplete Phase I investigation, since installation with no data availability does not constitute completion

Response

In order to begin data aggregation and background comparison, a cut off date for accepting additional data had to be established Unfortunately, the results from these wells was not available at that time The data that eventually came in falls within the data set previously available A statement will be added to the report that explains this concept

19 Comments

Section 2 2 3 Page 2-24 Deviations from the Work Plan – Why was the boundary of IHSS 143 not extended, if the suspected contamination was outside the defined area?

Response
The text is inaccurate on this point The IHSS was extended in the HRR, subsequent to 1992 update, and now reflects the area investigated during the field investigation The text will be changed to reflect this change A Document Change Notice to the Work Plan was issued to address the change in boundaries

20 Comments
Section 2 2 5 Page 2-29, third para , Stage 2 – This paragraph presents some results for this IHSS, yet no other IHSS has results presented in Section 2 Why give results here?

Response
Results were deleted from this paragraph to provide consistency with the other similar sections

21 Comments
Section 2 2 5 Page 2-29, Deviations from TM1 and Work Plan – The change in spacing from 25-foot to 40-foot should be explained

Response
Based on a review of TM1, the HPGe survey replaced the FIDLER instrument survey Therefore, this is not a deviation from the Work Plan and TM1 The text was deleted from this section

22 Comments
Section 2 2 5 Page 2-30 Deviations from TM1 and Work Plan, second bullet – Explain why it is necessary to state that the SGS grid spacing was not reduced for this sample site

Response
The text was added to the end of the deviation concerning the referenced bullet "Although this is above the detection limit, the concentration was not considered significant enough to warrant reduced grid spacing "

23 Comments
Section 2 2 6 Page 2-33 Stage 3, first para – This paragraph indicates that no soil borings were made and, therefore, no data were collected on the actual IHSS If there was no time to perform this work after the IHSS location was redefined, this report should so state Presenting data for a location that is not of interest and has no bearing on the investigation should be deleted from the report

Response
The statement that the IHSS location was revised and relocated is in error The IHSS location has never changed The borings are outside the area that the Work Plan defines for the IHSS because they were based primarily on aerial photos and the geophysical study The text was revised

24 Comments
Section 2 2 7 Page 2-35 Stage I, first para – The IHSS should be sampled, if the area of concern is not the IHSS, the IHSS should be relocated IHSS 167 3 does not appear to have been sampled

Response
Section 1 3 2 explains that IHSSs 167 2 and 167 3 were transferred to OU7 after the field investigation was completed The former IHSS 167 3 was sampled and evaluated, see Figure 2 2-21

25 Comments
Table 2 1-1 second column, first item for Walnut Creek Drainage – What type of activity had 11 "things" done?

Response
The text, "Stream Surface Water Sampling (base flow)" was added to the blank space

26 Comments
Table 2 2-1 page 4, IHSS 156 2, Soil Dump Area, Radiation Survey – Reason for Deviation is given as "As per EG&G " This is not a reason The explanation in the text should be inserted here

Response
Text changed to "HPGe survey equipment unavailable prior to field sampling "

27 Comments
Section 2 4 The review of aerial photography showed that IHSS 156 2 extended further to the west than previously thought This additional area was not sampled No explanation other than paved and gravel covered areas were not sampled Is this sufficient justification for not sampling about 1/4 of the IHSS? Gravel was removed prior to sampling in IHSS 165 (Section 2 2 5)

Response
Because the HRR changed the IHSS boundary at about the time that the field work program was beginning, the decision was made to sample according to the original locations from the Work Plan The field samples were determined to provide sufficient coverage of the soil disposal area Text was added to Section 2 2 4, Stage 3 to provide clarity

28 Comments
Section 2 2 5 Why were the deviations from TM1 and the work plan for Stage 2 activities made and what is the justification for them? Provide support for the reduced scope of the investigation (especially the rad survey) and evidence that it provides adequate information and meets the DQOs

Response
See response to question 21 for the first deviation and question 22 for the third deviation The second deviation is only a result of the actual application of the 100-ft grid to the IHSS The maximum possible SGS locations, using the 100-ft grid was 31 The figure in the Work Plan that contains the SGS locations only shows 39 locations Therefore, the 50 locations were never realistic and adequate coverage of the IHSS was obtained

The DQOs presented in Section 1, Table 1 4-1 do not provide information that would indicate that these deviations are problematic

29 Comments

Section 2 2 6 The east part of Trench C was relocated south of the soil borings (taken to investigate this trench) based on the geophysical survey Are the existing borings sufficient to characterize Trench C If so give supporting reasons and if not what is the justification for not taking new soil borings within the new boundary of the east part of Trench C?

Response

See response to question 23

30 Comments

Section 3 6 2 1 2 This section describes the recharge to the UHSU The 4th paragraph describes recharge from the present landfill (IHSS 114) and refers to Figure 3 6-1 Please show the location of the present landfill on this figure to assist the reader The text states that groundwater flows from the present landfill to the southeast toward South Walnut Creek The southeast flow from the present landfill is actually toward North Walnut Creek

Response

The text was corrected and the map now shows the OU7 Landfill boundary

31 Comments

Section 3 7 3 This section discusses the capacities of the A and B series ponds relative to volumes of runoff The section discusses previous high precipitation events but does not include the probable record runoff of 1995 While this data may be too new for thorough analysis, this report should mention the event and its impact on the ponds and potential off-site migration of contaminants in a general qualitative way

Response

The May 1995 storm was much less than a 100 year event, however it was in combination with nearly saturated soils The result was a large amount of water moving through the system This was also in combination with pond levels that were already high because of the batch-release mode of pond management There is little reason to believe that this storm transported pond sediments downstream Furthermore, there is no evidence of soil contamination within OU6 that is high enough to cause elevated levels of contamination to be transported offsite Therefore, the statements concerning the pond system capacity are still accurate Outside of the large volume of water that exited the site during this storm, there is not enough information about the level of contamination in the surface water from this storm to make any unique conclusions

32 Comments

Section 3 7 4 6th paragraph This paragraph discusses several of the sub-basins of Walnut Creek The first sentence uses the term "best developed drainage" to define the sub-basins essentially around the security area Define the meaning of "best developed drainage "

Response

Text was changed to read "most heavily altered and developed "

33 Comments

Section 3 8 Ecology section, "To be supplied by Stoller," is missing

Response

This section was not meant to be included and will be deleted from the Final Report

1

34 Comments
Section 3 9 1 2 2nd paragraph The text says that 2 borings were drilled adjacent and parallel to 2 other borings What does parallel mean in this usage?

Response
The word "parallel" appears to be unnecessary and was deleted

35 Comments
Section 4 2 4 Please include a brief discussion of the 5X and 10X rules referred to in the 4th paragraph

Response
A reference to Appendix E7 2 3 was added to the text Although this section does not give a definition of the 5X and 10X rule, it does describe its source and how it was applied

36 Comments
Section 4 3 5 5th paragraph Why were antimony and manganese retained as COIs?

Response
Please see Appendix J, Section 3 4 4 for a detailed explanation of why antimony and manganese were retained as COIs

37 Comments
Section 5 1 3 5th paragraph Please explain the meaning of " when flow carrying capacity is less than the resistance of sediment " in the first sentence

Response
The text was changed to read "Sediment deposition can occur when the settling velocity of the particulate material exceeds the turbulent velocity of the stream "

38 Comments
6th paragraph Isn't outflow from at least some of the ponds restricted and as a consequence any sediment flowing into the pond will necessarily precipitate in the pond unless resuspended by a large storm event? If this is the case the discussion of when deposition will occur in the ponds is unnecessary because all sediment will ultimately precipitate in the ponds

Response
Although the detention and discharge of pond waters is tightly controlled, not all of the particulate material will settle in the ponds This is due to extremely slow settling velocity of small particles combined with wind agitation and continuous inflows from the creeks or discharges of upstream ponds

39 Comments
Section 5 2 1 Sediment Transport – The last sentence says that sediment transport processes tend to slow the migration of chemicals with high partition coefficients relative to those with low coefficients This is not exactly true Chemicals with high partition coefficients rely on sediment transport for migration These chemicals, because they are bound to sediment particles due to their high partition coefficients, are not free to migrate as dissolved constituents of water It is not the sediment transport process that slows their migration but their high partition coefficient

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Response
The text was changed to read "Sedimentation processes tend to slow the overall migration of chemicals with high partition coefficients "

40 Comments
Section 5 3 2 Last paragraph Metals and radionuclides have been found in groundwater from wells located near the W&I Pond Is it possible that these contaminants are associated with surface soils that were introduced to the groundwater during the drilling and well installation process rather than from groundwater itself? There have been problems with contamination introduced to groundwater by drilling in this area

Response
There is a significant likelihood that the metals and radionuclides found in groundwater from wells near the W & I pond were introduced to the groundwater during the drilling and well installation process A discussion of this possibility was added to the appropriate subsections of Section 4, Nature and Extent of Contamination

41 Comments
Section 5 4 1st paragraph In this paragraph the text says that "It was determined that only one of the identified conditions (VC in well 3586) required some type of quantitative modeling " What is the support for this conclusion, where is it presented, and has it received regulator concurrence? If this conclusion is supported later in this document, it should be so stated here

Response
This is documented in the OU6 Model Description TM Although the regulatory agencies, specifically the EPA, declined to issue final approval on this document, they are familiar with the choice In light of the sitewide groundwater strategy, the OU6 approach is still reasonable

42 Comments
Section 5 5 1 Last paragraph Of the metal COCs only Antimony is modeled because it is the worst case metal says the text The reason given is that if it results in no risk, the other metals are not a problem What about the cumulative effects of all metals especially if Antimony approaches unacceptable risks?

Response
The surface water model was designed to evaluate transport of COCs from source areas, not to study the cumulative effects of all transported metals Therefore, Antimony was used as a tracer or surrogate constituent to evaluate worst-case transport The HHRA addresses the cumulative effects of risk

43 Comments
Table 5 5-1 & Section 5 5 3 2 The explanation provided for the significant prediction errors for Ponds A- 1 through A-3, and Ponds B- I through B-4 does not appear to be sufficient for justifying the validity of the model results Having plus and minus deviations added together to cancel out the errors does not appear to be an appropriate scientific approach

Response
As explained in the second paragraph under Section 5 5 3 2, the ponds were pooled to reduce the effects of the somewhat uncertain operation rules Pond operation involves

the routing of surface water through the A- and B-series ponds To account for this, operation rules were incorporated into the model However, these rules may differ from past pond operating procedures and this uncertainty makes the comparison of simulated and estimated sediment deposits in individual ponds less useful for calibration purposes

44 Comments

The discussion of the statistical methods used is very clear and adequately detailed However, the procedures applied which vary depending on the frequency of non-detect values seem contradictory In Case 2, when the frequency of non-detects is greater than 15% but less than 90%, it is correctly stated that the simple substitution of one-half of the sample quantification limit (SQL) for non-detect values introduces an unacceptable bias and is not recommended by EPA In Case 3, where the frequency of non- detect values is greater than 90%, the substitution of one-half the SQL is used, even though the bias thus introduced is greater than was unacceptable in Case 2 However, the bias introduced by this method would tend to increase the estimates of risk rather than decrease it Therefore, changing the method would not increase the estimates of risk or alter the Human Health Risk Assessment conclusions

Response

Sanford et al (1993) tested the accuracy of different replacement methods for nondetects, evaluating the accuracy of different methods by the root mean square error and by a scoring system They concluded that the performance of the different replacement methods differed with the number of nondetects For as much as 80% nondetects, simple substitution and the maximum likelihood estimation (MLE) methods show similar strength In cases with greater than 80% nondetects, the results obtained from simple substitution and MLE may be quite different, and can lead to different conclusions (depending on where the SQLs lie in relation to the detected values) For the OU6 risk assessment, a 90% nondetect rate was chosen as a cutoff point for not using the MLE method In data sets with greater than 90% nondetects (Case 3), the maximum detected concentration is used for the concentration term when the use of simple substitution yields a 95% UCL that exceeds the maximum The text for Case 3 was amended

45 Comments

There are some errors in the reported numbers of samples in the data tables, specifically Tables 10 and 17 The calculations for these data sets are apparently in error However the errors are-such that the resulting estimates of risk are increased rather than decreased Therefore, changing the method would not increase the estimates of risk or alter the Human Health Risk Assessment conclusions

Response

In Tables 10 and 17 of Attachment J1, the U-qualified data were dropped if the SQLs were so high that using one-half of the SQL would skew the date above the maximum The maximum detected concentration is used for the concentration term in data sets where the 95% UCL exceeds the maximum The 95% UCL is used in the remainder to the data sets

References

Sanford, R F , Pierson, C T , and Crovelli, R A , 1993 An objective replacement method for censored geochemical data *Mathematical Geology*, 25 1, p 59-80

**Attachment C**

**Ecological Risk Assessment Comments**

**General Comments**

46 Comments
There are typographical errors and inconsistent definition of acronyms in the document Suggest conducting a technical edit of the document The technical memoranda (TM) referenced (TM1, TM2, and TM3) in the summary document were not available for this ecological review

Response

The text of Section 7 was excerpted from Appendix F, which was prepared as a "stand alone" document Inconsistencies in acronym usage and definitions will be corrected Typographical errors will be corrected

**Specific Comments**

47 Comments
Page 7-1, Paragraph 1 The first sentence indicates that the ERA for the Walnut Creek watershed is summarized in this document, however, the title of the document references Woman Creek Is the Walnut Creek ERA included in the Woman Creek ERA summary?

Response
The text was changed to read "Walnut Creek "

48 Comments
Page 7-1, Paragraph 2 The text indicates that "ERAs are now required for four areas " It is unclear from this statement whether or not these ERAs have been completed This paragraph further indicates that the ERA accompanying this report addresses ecological risks in the Walnut Creek and Woman Creek watersheds Is "this report" referring to Appendix F or to the current summary?

Response
A draft ERA was prepared for OU3 and is currently under review by agencies An ERA for the Industrial Area has not been initiated The text of the report will be revised to reflect the status of other ERAs at RFETS

49 Comments
Page 7-1, Paragraph 3 The last sentence of this paragraph states that the methodology used in the current risk assessment evaluates the likelihood that effects from chemical stressors are occurring or may occur, however, the summary text focuses primarily on the likelihood of current effects Risk assessments under CERCLA require an assessment of current and future risks Consider using a subheading under each existing summary of risks heading to highlight current and future risks In addition to discussing the risks from chemical stressors, the summary also discusses the risks from radionuclides

Response
The current risk evaluation focuses on chemical exposures under current conditions and uses available data on contaminant distribution to estimate exposure and risks Many of

the primary sources were removed due to past remediation activities, or will be attenuated through future site remediation Therefore, concentrations of Ecological Chemicals of Concern (ECOCs) in environmental media will probably decline with time due to chemical decomposition or dilution Thus, in most cases the current conditions probably represent the "worst-case scenario" with respect to potential exposure of ecological receptors

An exception to this assumption may be contaminants currently contained in groundwater, but not present near the surface The potential for such chemicals to "daylight" at surface water seeps and becoming available to plant and animals is addressed in Appendix F However, this treatment is relatively qualitative, because groundwater modeling for RFETS is not well enough developed to make quantitative predictions about the contaminant concentrations in surface waters that would result from contact with groundwater sources

The text of Section 7 and Appendix F will be revised to more clearly address potential future conditions The evaluations will be qualitative and indicate the potential for increases in the concentrations, bioavailability, or toxicity of ECOCs

50 Comments

Page 7-2, Section 7 1, Paragraph 1 The text states that the ecological risk assessment methodology (ERAM) was developed to support risk decisions for individual OUs, however, the second paragraph on page 7-1 implies that risk assessments should be conducted on watershed boundaries rather than on artificial administrative boundaries Does this apparent difference imply that the ERAM might not be appropriate for conducting risk assessments on watershed boundaries?

Response

The text of this paragraph is meant to imply that while the ERA was designed to address risks in this section of the watershed, it was also designed to support risk management decisions in individual OUs To accomplish this, contributions of individual or groups of IHSSs within an OU to overall risks were included in the results This approach intended to allow risks from each OU to be evaluated relative to other sources at RFETS

51 Comments

Page 7-4, Section 7 2, Paragraph 5 This paragraph states that the Hazard Index (HI) is used to approximate cumulative risk While the HI does have value as an additive measure of risk from different chemicals, it does not necessarily accurately depict cumulative risk to a species Other factors such as loss or degradation of habitat and changes in availability of food source(s) can impact the cumulative risk to a species and would not be accounted for in HI Further, HI as defined in this paragraph, appears to measure current risk only and not future risk Please discuss the limitations of using HI as a measure of cumulative risk

Response

As it was used in this ERA, the HI was intended to be a rough indicator of risk from chemical exposure of a given species to multiple chemicals We recognize that the HI approach does not accurately represent risks to habitat quality The evaluation of multiple species (or functional groups) at various levels of biological organization was intended to allow assessment of impacts to habitat components This point was clarified in the text

52 Comments

Page 7-4, Section 7 2, Last Paragraph The text identifies wide-ranging species as coyote, mule deer, and red-tailed hawk, but does not identify these species as receptors This same sentence states that four receptors with more restricted home ranges were

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also identified, but the text does not identify them and introduces the phrase "limiting species" Please clarify if the wide-ranging species identified are also receptors Please also clarify if the four receptors referred to in the same sentence should be considered as four receptor species and identify the species in this paragraph

Response
This comment addressed multiple points regarding the use of representative receptors Each point is addressed under a separate bullet The paragraph will be revised to clarify the use of receptor species and groups

53 Comments
Please also clarify that species such as the coyote, mule deer, and red-tailed hawk may cover large areas during certain life stages and during certain seasons and that life stage of an individual is also important relative to exposure and toxicity Please also indicate what life stage of these species, if any, was considered for the ERA and whether any of these species have local, more restricted home ranges at RFETS (e g , is the red-tailed hawk at RFETS considered migratory or non-migratory for this ERA?)

Response
For purposes of the preliminary risk screen, all receptors were assumed to spend 100 percent of their time at RFETS Thus, the exposure scenario included all life stages

54 Comments
This paragraph also indicates that for wide-ranging species (receptors?), no HQs or HIs were greater than 1 and therefore risk is negligible It is not clear if the risk referred to is current or future risk

Response
Ecotoxicological benchmarks used to evaluate risk from exposures were based on information and methods developed at Oak Ridge National Laboratories The benchmarks were developed from experimental studies involving chronic exposures and measurement of reproductive effects in experimental animals, or adjusted using "safety factors" if these specific data were not available (ORNL 1994 ) Thus, the benchmarks that were derived to assess risk at sensitive life stages This process is described in detail in Appendix F The text of Section 7 2 will be revised to clarify the context

55 Comments
This paragraph further indicates that ECOCs were identified for limiting species and aquatic receptors Please clarify if limiting species are consider species with limited home ranges and whether or not this group of species is exclusive of any aquatic receptors This same sentence states that because these species spend all or most of their time in small areas, they are therefore in more frequent contact with contaminants Species with limited home ranges and/or confined by media (e g , fish in water) are only in more frequent contact with contaminants if the media they are restricted to is contaminated

Response
See response # 49
The paragraph will be revised to more clearly define receptors and their use The use of "limiting species" was intended to represent the "limiting" or worst case exposure scenario for areas with potential contamination (i e , source areas) The preliminary exposure assessment did not address areas remote from potential contamination

13

56 Comments

Page 7-6, Section 7 3 1, Paragraph 4 This paragraph lists 5 groups of receptors Please clarify what categories (wide-ranging or limiting) these receptor groups correspond to and identify the specific species in each of the 5 groups For example, which of the 5 groups do the coyote and mule deer belong to? If the 5 receptor groups on this page are the result of screening that eliminated the mule deer and coyote from further consideration due to negligible risk, then please clarify why the receptor group terrestrial-feeding raptors remains

Response

The paragraph lists the receptor groups evaluated in the risk characterization which does not include receptors for which negligible risk was identified in the preliminary risk screen The "terrestrial-feeding raptors" in this list would be more appropriately identified as "terrestrial-feeding raptors with small foraging ranges " The American kestrel has a relatively small foraging range and was identified for further risk characterization in some source areas The text will be clarified to reflect this point

57 Comments

Different receptor groups are also referenced in Table F4-1 The groups listed in Table F4-1, however, do not include terrestrial-feeding raptors, while the summary document does Table F4-1 also lists as a group aquatic-feeding wildlife, while the summary document does not, but lists aquatic-feeding birds The table also includes an additional category, Radionuclide Effects to Vegetation and Wildlife, which is not a receptor group Please clarify the differences between Table F4-1 and the receptor groups listed in the summary document (Are the receptor groups identified in the summary and in Table F4-1 supposed to match?)

Response

Terrestrial-feeding raptors were incorrectly omitted from Table F4 1 Terminology use between Section 7 and the Appendix will be clarified As described in Appendix F, risks from radionuclide contamination were identified separately in Table F4 1

58 Comments

Page 7-6, Section 7 3 1, Paragraph 6 The first sentence of this paragraph states that endpoints were identified for each resource category Please define resource category This phrase is not defined in the previous text or in the referenced Table F4-1

Response

The term "resource category" will be replaced with receptor group

59 Comments

Page 7-7, Section 7 3 2, Paragraph 1 The last sentence of this paragraph indicates that "more accurate" or quantitative methods were used Does this sentence imply that the methods used in other cases are less accurate or less quantitative Should the word precise be substituted for the word accurate? Please clarify

Response

The term "accurate" will be replaced with "precise "

60 Comments

Page 7-7, Section 7 3 2, Paragraph 2 The first sentence of this paragraph refers to measurements in biota but does not identify the biota (e g , tissue samples?) Please clarify

14

The second sentence of this paragraph references Suter, 1993 following the statement "These data were reliable indicators of exposure " Please clarify if Suter 1993 is the reference for the reliability of these particular data or for these general data types

This paragraph also references Table 7 3 1 but Table 7 3 1 is not included in the summary package received for review

Response
The biota samples refer to tissue samples The reference from Suter (1993) is to the type of sample These points will be clarified in the revised text

61 Comments
Page 7-7, Section 7 3 2 1, Paragraph 3 The first sentence states that HQ and HI calculations predict risk levels The last sentence of this paragraph implies that HQ and HI predict toxicity Do these metrics actually predict toxicity or are they merely a measurement or estimate of risk? Please clarify

It is not clear what is meant by the second sentence of this paragraph Please clarify

Response
The quotient method was used as an indicator of risk that predicted exposures would result in toxicity The text will be revised to indicate this more clearly The second sentence of the paragraph will be deleted

62 Comments
Page 7-8, Section 7 3 2 1, Paragraph 4 It is not clear what is meant by the reference to community composition (e g , total organism density and species richness) Was community composition measured using total organism density and species richness only?

Response
Total organism density and species richness were presented as examples of community composition metrics A more complete description of the analysis is presented in Appendix F

63 Comments
It is also not clear what is gained by the discussion in Paragraphs 4-7 in this Section If this Section is supposed to summarize risks to aquatic life, it might assist the reader to clearly state what the current and future risks to aquatic life are estimated to be

Response
Paragraphs 4-7 identified in the comment address the lack of agreement between the preliminary risk screen which was based entirely on literature-derived benchmarks and chemical concentrations in abiotic media, and direct measures of biological community attributes This suggests that the results of the preliminary screen overestimated the risk that chemical contamination would lead to toxic effects in aquatic test organisms and resultant changes in the community composition The text will be revised to more clearly support this conclusion

15

64 Comments
Page 7-9, Section 7 3 2 2, Paragraph 1 The last sentence in this paragraph requires a reference

Response
A reference will be provided to support this statement

65 Comments
Page 7-9, Section 7 3 2 3, Paragraph 4 The last sentence of this paragraph suggests that further sampling is required to further refine exposure estimates It might also be helpful to conduct prey studies of local kestrel populations to more precisely estimate the percentage and source of mammals comprising their diet

Response
Data on kestrel diet composition are available for the Colorado Front Range Small mammals are usually not 100 percent of the kestrel diet However, for purposes of the exposure assessment, the kestrels entire diet was assumed to contain the metal concentrations found in small mammals This was necessary because data on other dietary components (e g , insects) were not available for the A-ponds source area

66 Comments
Page 7-11, Section 7 3 2 4 Should this Section be renamed "Summary of Risks to Preble's Jumping Mouse"? Was this species chosen to represent all small mammals?

Response
The Preble's meadow jumping mouse was selected to represent the small mammals because of its special status This point will be clarified in the text

67 Comments
Page 7-11, Section 7 3 2 4, Paragraph 2 It is assumed that references to the "jumping mouse" refer to the Preble's meadow jumping mouse If so, suggest using consistent terminology

Response
References to Preble's meadow jumping mouse will be made consistent

68 Comments
Page 7-12, Section 7 3 2 5, Paragraph 1 The fifth sentence in this paragraph should be deleted if it can not be supported one way or another

Response
The statement refers to the range of natural conditions at the sites In most cases, the toxicity reference values (TRVs) were based on the 95 percent upper confidence limit for RFETS background data Many of the site exposure concentrations were not much higher than RFETS background conditions resulting in HQs not much greater than 1 0 This statement in the text refers to the possibility that site metal concentrations may be within the natural range More support for this statement will be provided

69 Comments
Page 1, Table 7 3-1 Suggest using the heading "Receptor" instead of "Receptors at Risk" in the table heading

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It would assist the reader if all of the "Source Areas" identified in Table 7 3-1 corresponded to a map such as Figure 7 2-2

It would assist the reader if Hazard Indices were also included in this Table

Response
"Receptors at Risk" will be replaced with "Receptor" in the table

Figure 7 2-2 was deleted from this section

This table lists the hazard quotients for the ECOCs The hazard indices were generated and used in the screening of PCOCs and therefore do not belong on this table

70 Comments
Figure 7 2-2 It would be helpful if this Figure were modified for reproduction in black and white The current black and white review copy does not reflect any difference in the patterns used to depict Hazard Indices for American kestrel, great blue heron, or mallard

Response
Figure 7 2-2 was deleted from this section

References

ORNL (Oak Ridge National Laboratory) 1994 Toxicological Benchmarks for Screening Contaminants of Potential Concern 1994 Revision

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